CLAIMS

What is claimed is:

5   1.   In a data communications device, a method for managing a flow of packets, comprising the steps of:

transferring packets of a particular packet flow based on an initial policy scheme;

planning a scheme change to change the initial policy scheme to a new

10   policy scheme based on transfer conditions within the data communications device existing while transferring the packets of the particular flow based on the initial policy scheme;

providing a change signal to a source of the particular packet flow, the change signal indicating that the data communications device has planned the

15   scheme change; and

processing the scheme change based on one of (i) a reply signal from the source and (ii) an absence of a reply signal from the source.

2.   The method of claim 1 wherein the initial policy scheme is an initial packet

20   dropping scheme for dropping packets from the particular packet flow, and wherein the new policy scheme is a new packet dropping scheme for dropping packets from the particular packet flow in a manner that is different than that of the initial packet dropping scheme.

25   3.   The method of claim 1 wherein the initial policy scheme is an initial packet scheduling scheme for scheduling packets of the particular packet flow for transmission, and wherein the new policy scheme is a new packet scheduling scheme for scheduling packets of the particular packet flow for transmission in a manner that is different than that of the initial packet scheduling scheme.

4.   The method of claim 1 wherein the initial policy scheme is an initial packet classification scheme for classifying packets of the particular packet flow, and wherein the new policy scheme is a new packet classification scheme for classifying packets of the particular packet flow in a manner that is different than

5   that of the initial packet classification scheme.

5.   The method of claim 1 wherein the step of processing the scheme change includes the steps of:

        receiving, from the source, a reply signal directing the data

10   communications device to cancel the scheme change;

        and canceling the scheme change in response to the reply signal.

6.   The method of claim 5 wherein the step of transferring includes the steps of:

        transferring packets of the particular packet flow having a first priority

15   prior to the step of receiving the reply signal; and

        transferring packets of the particular packet flow having a second priority

        that is different than the first priority after the step of receiving the reply signal.

7.   The method of claim 5 wherein the step of transferring includes the steps of:

20   transferring packets of the particular packet flow having a first size prior to

        the step of receiving the reply signal; and

        transferring packets of the particular packet flow having a second size that

        is different than the first size after the step of receiving the reply signal.

25   8. The method of claim 5 further comprising the step of:

        in response to the reply signal, attempting to plan a scheme change for a

        packet flow that is different than the particular packet flow.

9.   The method of claim 1 wherein the step of processing the scheme change includes the steps of:

        receiving, from the source, a reply signal accepting the scheme change; and

5   changing, in response to the reply signal, the initial policy scheme to the new policy scheme such that packets of the particular packet flow subsequently are transferred based on the new policy scheme rather than the initial policy scheme.

10   10.   The method of claim 1 wherein the step of processing the scheme change includes the steps of:

        detecting an occurrence of a timeout condition indicating that, since the change signal was provided, a timeout period has elapsed without receiving a reply signal from the source; and

15   changing, in response to the occurrence of the timeout condition, the initial policy scheme to the new policy scheme such that packets of the particular packet flow subsequently are transferred based on the new policy scheme rather than the initial policy scheme.

11.   A data communications device for managing a flow of packets, comprising:

a transfer circuit that transfers packets of a particular packet flow based on an initial policy scheme;

a controller, coupled to the transfer circuit, that plans a scheme change to change the initial policy scheme to a new policy scheme in response to a particular transfer condition within the data communications device existing while the transfer circuit transfers the packets of the particular flow based on the initial policy scheme; and

a feedback circuit, coupled to the controller, that provides a change signal to a source of the particular packet flow, the change signal indicating that the data communications device has planned the scheme change, the feedback circuit enabling the controller to process the scheme change based on one of (i) a reply signal from the source and (ii) an absence of a reply signal from the source.

12.   The data communications device of claim 11 wherein the initial policy scheme is an initial packet dropping scheme for dropping packets from the particular packet flow, and wherein the new policy scheme is a new packet dropping scheme for dropping packets from the particular packet flow in a manner that is different than that of the initial packet dropping scheme.

13.   The data communications device of claim 11 wherein the initial policy scheme is an initial packet scheduling scheme for scheduling packets of the particular packet flow for transmission, and wherein the new policy scheme is a new packet scheduling scheme for scheduling packets of the particular packet flow for transmission in a manner that is different than that of the initial packet scheduling scheme.

14. The data communications device of claim 11 wherein the initial policy scheme is an initial packet classification scheme for classifying packets of the particular packet flow, and wherein the new policy scheme is a new packet classification scheme for classifying packets of the particular packet flow in a manner that is different than that of the initial packet classification scheme.

15. The data communications device of claim 11 wherein the feedback circuit is configured to:

    (i) receive, from the source, a reply signal directing the data communications device to cancel the scheme change; and

    (ii) instruct the controller to cancel the scheme change in response to the reply signal.

16. The data communications device of claim 15 wherein the transfer circuit, under direction of the controller, (i) transfers packets of the particular packet flow having a first priority prior to receipt of the reply signal, and (ii) transfers packets of the particular packet flow having a second priority that is different than the first priority after receipt of the reply signal.

17. The data communications device of claim 15 wherein the transfer circuit, under direction of the controller, (i) transfers packets of the particular packet flow having a first size prior to receipt of the reply signal, and (ii) transfers packets of the particular packet flow having a second size that is different than the first size after receipt of the reply signal.

18. The data communications device of claim 15 wherein the controller, in response to the reply signal, is configured to attempt to plan a scheme change for a packet flow that is different than the particular packet flow.

19. The data communications device of claim 11 wherein the feedback circuit is configured to:

(i) receive, from the source, a reply signal accepting the scheme change; and

5 (ii) instruct the controller to change, in response to the reply signal, the initial policy scheme to the new policy scheme such that the transfer circuit transfers packets of the particular packet flow based on the new policy scheme rather than the initial policy scheme.

10 20. The data communications device of claim 11 wherein the feedback circuit is configured to:

(i) detect an occurrence of a timeout condition indicating that, since the change signal was provided, a timeout period has elapsed without receiving a reply signal from the source; and

15 (ii) instruct the controller to change, in response to the occurrence of the timeout condition, the initial policy scheme to the new policy scheme such that packets of the particular packet flow subsequently are transferred based on the new policy scheme rather than the initial policy scheme.

21.   A method for providing a flow of packets, comprising the steps of:

outputting packets of a particular packet flow to a data communications device that transfers the packets of the particular packet flow based on an initial policy scheme;

5   receiving, in response to the outputted packets of the particular packet flow, a change signal from the data communications device, the change signal indicating that the data communications device has planned a scheme change to change the initial policy scheme to a new policy scheme; and

providing, to the data communications device, a reply signal that provides

10   direction for processing the scheme change.

22.   The method of claim 21 wherein the reply signal directs the data communications device to cancel the scheme change.

15   23.   The method of claim 22 wherein each of the packets outputted in the step of outputting has an initial packet processing priority, and wherein the method further comprises the step of:

after the step of receiving the change signal, outputting packets of the particular packet flow to the data communications device such that each of the

20   packets has a new packet processing priority that is different than the initial packet processing priority.

24.   The method of claim 22 wherein each of the packets outputted in the step of outputting has an initial packet size, and wherein the method further comprises the

25   step of:

after the step of receiving the change signal, outputting packets of the particular packet flow to the data communications device such that each of the packets has a new packet size that is different than the initial packet size.

25. The method of claim 21 wherein the reply signal directs the data communications device to perform the scheme change.

26. An apparatus for providing a flow of packets, comprising:

5   a transfer circuit that outputs packets of a particular packet flow to a data communications device that transfers the packets of the particular packet flow based on a policy scheme; and

        a controller, coupled to the transfer circuit, that (i) receives, in response to the outputted packets of the particular packet flow, a change signal from the data

10   communications device, the change signal indicating that the data communications device has planned a scheme change to change the policy scheme from an initial policy scheme to a new policy scheme, and (ii) provides, to the data communications device, a reply signal that provides direction for processing the scheme change.

15

27. The apparatus of claim 26 wherein the reply signal directs the data communications device to cancel the scheme change.

28. The apparatus of claim 27 wherein the controller directs the transfer circuit to

20   output packets of the particular packet flow (i) with an initial packet processing priority prior to receipt of the change signal, and (ii) with a new packet processing priority that is different than the initial packet processing priority after receipt of the change signal.

25 29. The apparatus of claim 27 wherein the controller directs the transfer circuit to output packets of the particular packet flow (i) with an initial packet size prior to receipt of the change signal, and (ii) with a new packet size that is different than the initial packet size after receipt of the change signal.

30.   The apparatus of claim 26 wherein the reply signal directs the data communications device to perform the scheme change.

31.   A computer program product that includes a computer readable medium having

5   instructions stored thereon for managing a flow of packets in a data communications device, such that the instructions, when processed by the data communications device, cause the data communications device to perform the steps of:

transferring packets of a particular packet flow based on an initial policy

10   scheme;

planning a scheme change to change the initial policy scheme to a new policy scheme based on transfer conditions within the data communications device existing while transferring the packets of the particular flow based on the initial policy scheme;

15   providing a change signal to a source of the particular packet flow, the change signal indicating that the data communications device has planned the scheme change; and

processing the scheme change based on one of (i) a reply signal from the source and (ii) an absence of a reply signal from the source.

20

32. A computer program product that includes a computer readable medium having instructions stored thereon for providing a flow of packets from a computerized apparatus, such that the instructions, when processed by the computerized apparatus, cause the computerized apparatus to perform the steps of:

5   outputting packets of a particular packet flow to a data communications device that transfers the packets of the particular packet flow based on an initial policy scheme;

receiving, in response to the outputted packets of the particular packet flow, a change signal from the data communications device, the change signal

10   indicating that the data communications device has planned a scheme change to change the initial policy scheme to a new policy scheme; and

providing, to the data communications device, a reply signal that provides direction for processing the scheme change.

15   33. A packet drop circuit for dropping packets stored within a data communications device, the packet drop circuit comprising:

a monitor circuit that monitors the data communication device for a particular transfer condition while the data communications device transfers packets of a particular flow based on an initial policy scheme;

20   a change circuit, coupled to the monitor circuit, that plans a scheme change to change the initial policy scheme to a new policy scheme in response to a detection of the particular transfer condition by the monitor circuit; and

a notification circuit, coupled to the change circuit, that provides notification of the planned scheme change.

25